What is claimed is:

1. An immortalized human cardiomyocyte cell line.

2. An immortalized human vascular smooth muscle cell line.

3. The cell line of claim 1, wherein the cardiomyocyte cell line is designated AC16 (ATCC Designation No. PTA-1500).

4. The cell line of claim 1, wherein the cardiomyocyte cell line is designated AC10 (ATCC Designation No. PTA-1501).

5. The cell line of claim 1, wherein the cardiomyocyte cell line is designated RL14 (ATCC Designation No. PTA-1499).

6. The cell line of claim 1, wherein the cell line integrates functionally with normal or myopathic cardiac tissue as determined by measurement of syncitial beating of the tissue.

7. A method for treating damaged cardiac tissue in a subject which comprises transplanting the cell line of claim 1 into a subject's heart containing damaged cardiac tissue.

8. A method for preparing a human immortalized cell line derived from a post-mitotic primary cell culture which comprises:

(a) providing a cell culture of human primary post-mitotic cells,

(b) providing a human fibroblast cell line which:

(i) has been transfected with a replicable nucleic acid vector which immortalizes

the fibroblast cell line,

(ii) has been depleted of its mitochondrial DNA thereby rendering the fibroblast cell line subject to growth selection due incapacity to perform glycolysis;

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(c) co-culturing the human fibroblast cell line of step (b) with the cell culture of step (a) under appropriate conditions so that cell fusion occurs; and

(d) growing the fused cells from step (c) in a selection medium which selects for cells with mitochondrial DNA,

(e) selecting cells from step (d) which contain a nucleus which originated from the cells of the primary culture, so as to prepare the human immortalized cell line.

9. The method of claim 8, wherein the cell culture of human primary non-proliferating cells in step (a) is a cell culture of primary human cardiac cells, primary human skeletal myoblast cells, human neuronal cells, or primary human osteoblast cells.

10. The method of claim 8, wherein the replicable vector is an SV-40 vector.

11. The method of claim 8, wherein the fibroblast cell line is designated DWFb1.

12. The method of claim 8, wherein the appropriate conditions for cell fusion in step (c) comprise incubation for about one minute in a 50% PEG solution.

13. A method for determining whether a composition of matter inhibits cardiomyocyte cell function which

comprises:

(a) admixing the composition with cells of an immortalized cardiomyocyte cell line prepared by the method of claim 8 in cell culture; and

(b) determining whether the cells in step (a) exhibit normal cardiomyocyte cell function by measuring gene expression or by measuring syncitial beating in culture, wherein decreased cardiomyocyte cell function indicates that the composition inhibits cardiomyocyte cell function.

14. A method for determining whether a composition of matter enhances cardiomyocyte cell function which comprises:

(a) admixing the composition with cells of an immortalized cardiomyocyte cell line prepared by the method of claim 8 in cell culture; and

(b) determining whether the cells in step (a) exhibit normal cardiomyocyte cell function by measuring gene expression or by measuring syncitial beating in culture, wherein increased cardiomyocyte cell function indicates that the composition enhances cardiomyocyte cell function.

15. The method of claim 13 or 14, wherein the composition of matter is a peptide or a peptidomimetic.

16. The method of claim 13 or 14, wherein the composition of matter is a small organic molecule.

17. The method of claim 13 or 14, wherein the composition of matter is a nucleic acid.

18. The method of claim 13 or 14, wherein the composition of matter is associated with a pharmaceutically acceptable carrier.

19. The method of claim 18, wherein the carrier is a diluent, an aerosol, a topical carrier, an aqueous solution, an ionic solution, a nonaqueous solution or a solid support.